M/045/049
cc Leslie
No task

NORTH AMERICAN EXPLORATION, INC.

MINERAL EXPLORATION SERVICES

August 11, 2010

Mr. Steven Allen
Mr. Larry Garahana
Bureau of Land Management
Salt Lake Field Office
2370 South 2300 West
Salt Lake City, UT 84119

Reference is made to 3809 (UT W011), UTU-73999

Transmitted herewith please find our report regarding Rock Characterization Tests and Analysis for the Cactus Mill Large Mine Operation. This operation is located near Gold Hill in Tooele County and is a proposed site to heap leach about 200,000 tons of copper ore. The mine is permitted as M/045/049, and a Ground Water Discharge Permit has been issued by the Utah Department of Environmental Quality.

The sampling of the rock was done under the direction of Larry Garahana of the BLM on June 30, 2010. These samples were then tested by both American Assay Laboratories and Inspectorate America Corporation. The accompanying report documents this work and includes all of the analytical data.

These data indicate that the ore from the Yellow Hammer Mine will consume acid during a heap leach operation and does not have the potential to generate acid mine drainage. We look forward to discussing this information with you at our meeting scheduled for August 12th.

Sincerely,

O. Jay Gatten

OJG/tmg

Enclosure (1)

Cc: Project (w/encl)
Correspondence (no encl)
Leslie Heppler / DOGM

RECEIVED
AUG 11 2010
DIV. OF OIL, GAS & MINING

447 NORTH 300 WEST, SUITE 3 • KAYSVILLE, UTAH 84037-4203
(801) 546-6453 • FAX: (801) 544-4554 • E-MAIL: nae@nae-xploration.com

DESERT HAWK GOLD CORPORATION

CACTUS MILL ROCK CHARACTERIZATION TESTS AND ANALYSIS

Yellow Hammer Mine
Tooele County, Utah

Prepared by:

O. Jay Gatten
North American Exploration, Inc.
447 North 300 West, Suite #3
Kaysville, UT 84037

(801) 544-3421

ojgatten@nae-xploration.com

August 10, 2010

1.0 INTRODUCTION

Desert Hawk Gold Corporation (DHG) has a milling operation located near Gold Hill in Tooele County, Utah. The property consists of mill site claims located on Federal lands which are administered by the Bureau of Land Management (BLM), and the mill is operated under Large Mine Permit M/045/049 which is issued by the Utah Division of Oil, Gas and Mining (DOGM). The Utah Department of Environmental Quality has also issued a Ground Water Discharge Permit (UGW 450010).

DHG has applied to amend the Large Mine Permit to heap leach 200,000 tons of copper ore from the nearby Yellow Hammer Mine. The BLM responded to this application in a letter dated June 22, 2010 and asked for additional Rock Characterization analysis and testing information (Exhibit 1).

2.0 ROCK CHARACTERIZATION SAMPLING PROGRAM

The copper ore to be leached will come from the nearby Yellow Hammer Mine. It was decided that representative composite samples of the ore would be collected at the four (4) sites where mining is planned as follows:

1. Main or A Zone (YHA)
2. B Zone (YHB)
3. C Zone (YHC)
4. West Zone (WZA)

The samples were collected on June 30, 2010 under the direction of BLM geologist Larry Garahana. Also in attendance were Rick and Stuart Havenstrite of DHG and Jay and Oren Gatten of North American Exploration, Inc. (NAE) (Exhibit 2). At each site a larger bulk sample (about 30 pounds) and a smaller sample (about three pounds) were collected. The larger sample went to Inspectorate America for rock characterization tests, and the smaller sample went to American Assay Laboratories for trace element and metal tests.

3.0 ROCK CHARACTERIZATION ANALYTICAL TESTS

In the letter of June 22nd, the BLM requested additional rock characterization information regarding:

1. Mineralogical Analyses
2. Static Testing
3. Kinetic Testing
4. Infiltration Modeling

The analyses done to date include 1) mineralogical analyses and 2) static testing.

3.1 Mineralogical Analyses

Samples for mineralogical analysis were sent to American Assay Laboratories in Reno, Nevada. This was job SPQ89608 and the analysis used the ICP (induced couple plasma) method (ICP-2DX) to analyze for 36 separate elements, including all the Resource Conservation and Recovery Act (RCRA) eight metals considered

for corrective actions in solid waste management. These analyses are included in Exhibit 3.

3.2 Static Tests

Samples for static testing were sent to the PRA Metallurgical Division of Inspectorate America in Reno, Nevada and Vancouver, British Columbia. This test is for Acid Base Accounting and is Job No. 10-360-02286-06. The analyses done are included in Exhibit 3 and include the following information:

1. Ph
2. Total Sulfur
3. Neutralization Potential (NP)
4. Net Neutralization Potential (NNP)
5. Maximum Potential Acidity (Acidation Potential or AP)

In addition, LECO tests were performed to determine total carbon and sulfur content of the rock.

4.0 ROCK CHARACTERIZATION TEST RESULTS

4.1 Mineralogical Analyses

Values for 36 separate elements are included in Exhibit 3. This includes the three most common metals of concern, which are 1) lead, 2) arsenic and 3) mercury.

We did not do petrographic or petrologic work. It is well documented in the literature and confirmed by visual examination, that the host rock for the copper ore is a weathered and fractured igneous rock known as a granodiorite.

4.2 Static Tests

Mineral samples from the Yellow Hammer Mine area have been determined to have no significant potential to form acid. The following chart shows the results of Acid/Base Accounting, Net Acid/Alkaline Production and Net Carbonate Values.

Summary of Test Results for Acid Base Accounting				
Sample ID	**YHA**	**YHB**	**YHC**	**WZA**
Percent Sulfur	0.25%	0.01%	0.02%	0.01%
Acidification Potential (AP)	0.78	0.41	0.66	0.25
Neutralization Potential (NP)	42.36	17.14	21.06	143.76
Net Neutralization Potential (NNP)	41.58	16.73	20.40	143.51
Net Carbonate Value (NCV)	2.08	1.28	0.58	5.56

4.3 Kinetic Tests

Kinetic testing is not warranted unless the potential for Acid Mine Drainage is clearly demonstrated by Static testing.

The BLM has requested that additional kinetic testing be performed, including a 20 week minimum Humidity Cell Leach Test. These test results will not be available for several months. However, The Nevada BLM has issued a "Water Resource Data and Analysis Policy for Mining Activities" which outlines the need for Kinetic Testing based on Static Testing results. (See Exhibit 4, page 7) The Nevada BLM "only requires a kinetic test if the NNP does not exceed +20 and/or the NP value is not at least three times greater than the AP value."

The following chart shows that the test results from static testing eliminate the need for additional kinetic testing. It is hoped that the Utah BLM will dismiss the requirement for kinetic testing prior to approval of the mine permit amendment.

Nevada Bureau of Land Management
Static Testing Analysis to Evaluate Additional Kinetic Testing

Sample	NNP	NNP<20	NP	AP	NP<3xAP	Additional Kinetic Testing Required
YHA	41.58	NO	42.36	0.78	NO	NO
YHB	16.73	YES	17.14	0.41	NO	NO
YHC	20.40	NO	21.06	0.66	NO	NO
WZA	143.51	NO	143.76	0.25	NO	NO

4.4 Infiltration Modeling

This work on the heap leach operation will be part of the Environmental Assessment to be conducted by JBR Environmental Consultants, Inc.

5.0 CONCLUSIONS

Based on the sampling and work done to date, it is concluded that:

1. Representative samples of the ore have been collected and analyzed by reputable laboratories.
2. Excess concentrations of RCRA-8 metals will not be released during leaching operations
3. The rock will not generate acid mine drainage during leaching operations.
4. The Kinetic testing under consideration would not be warranted based on the static test results

It is our conclusion that testing to date provides adequate assurance that ore leached at the Cactus Mill will not contribute hazardous metals to the environment or form acid mine water (AMD). The safe operation of this heap leach operation is further insured by compliance with the existing Ground Water Discharge Permit. This conclusion is also supported by a Nevada BLM paper titled "Water Resource Data and Analysis Policy for Mining Activity" (Exhibit 4).

DESERT HAWK GOLD CORPORATION

CACTUS MILL ROCK CHARACTERIZATION
TESTS AND ANALYSIS

EXHIBIT 1

BLM LETTER

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Salt Lake Field Office
2370 South 2300 West
Salt Lake City, Utah 84119
ph: (801) 977-4300; Fax: (801) 977-4397
www.ut.blm.gov/saltlake_fo

TAKE PRIDE® IN AMERICA

IN REPLY REFER TO:
3809 (UTW011)
UTU-73999

JUN 22 2010

Rick Havenstrite
Desert Hawk Gold Corporation
8921 North Indian Trail Road, Ste. #288
Spokane, Washington 99208

Dear Mr. Havenstrite:

On October 15, 2009, the Bureau of Land Management (BLM) Salt Lake Field Office received the first draft of your proposed modification to the Plan of Operations for the Cactus Millsite serialized UTU-73999 (UDOGM permit M/045/049).

The BLM subsequently requested additional information from you on February 10, and April 30, 2010, to be able to consider your Plan complete. The Utah Division of Oil Gas and Mining (DOGM) requested additional information from you on February 1, March 31, and May 19, 2010. To date, we have received a portion of the information requested, however, your plan still does not contain a complete description of the proposed operations under 43 CFR 3809.401(b).

On May 4, we received an e-mail response from your consultant, North American Exploration (NAE) addressing a portion of the information requested in the letter from BLM dated April 30, 2010. On June 10, 2010, BLM received the fourth version of your Plan Amendment which also provided some, but not all of the additional information requested by BLM and DOGM.

In order for the BLM to determine that your Plan Amendment is complete and facilitate the technical review of your submittal, you must provide this office with the following additional information required by 43 CFR 3809.401:

1) As part of your description of operations, please show in plan view, the layout of your process piping including water lines, acid lines, and transfer lines for process solutions. These should be shown either on Figure 5 (Proposed Surface Facilities) or on a separate figure. Describe the range of anticipated flow rates for your leach circuit.

2) Your March 4, 2010, e-mail response states that the "operation will be a 24/7 operation with no seasonal shutdowns". Please incorporate this statement into the text of your Plan Amendment as part of your schedule of operations.

3) The tentative schedule described in section 106.2 of your Plan Amendment states that you will "Complete Leach Operation" in 2013, "Rinse/Neutralize Ore" in 2016, and "Reclaim" beginning in 2016. Section 106.9 of your Plan states that once leaching operations have been completed, the heap will be rinsed and left in place for a period of one year. Please reconcile this discrepancy in your project chronologies.

4) Please state in your Plan Amendment, the strength of the sulfuric acid solution (g/L) you will be applying to the heap.

5) In many intrusive igneous rocks such as the granodiorite you propose to process, the average crustal abundance of radionuclides is relatively high. Leach solutions have the potential to mobilize any radionuclides present in the heap material. Therefore the BLM requests that you prepare a radiation monitoring plan that describes how you will provide early detection of potential problems, and supply information that will assist in directing corrective actions should they become necessary. Include the type and location of monitoring devices, sampling parameters and frequency, analytical methods, reporting procedures, and procedures to respond to adverse monitoring results as required by §3809.401(b)(4).

6) Please provide an Emergency Response Plan and Spill Contingency Plan [§3809.401(b)(2)(vi)]. You must identify the types, quantities, and locations of all regulated materials (including the ones listed in Appendix 7 of your Plan Amendment) on the site, locations of safety equipment and neutralizing chemicals, and the specific actions to be taken for different types, sizes and location of spills and releases.

7) For example, describe how you will deal with a release of acid forming, toxic, or other deleterious materials (i.e. leachate solution) into the environment, and what measures you will take to prevent such a release. Also describe your plans for the safe handling and storage of these materials as well as the materials/chemicals used by your facility. Your plan should identify those persons or positions responsible for responding to spills or releases of regulated fluids/materials at the site. Chains of authority and responsibility should be clearly identified. You will be required to post the Emergency Response Plan on site.

8) The BLM does not believe that the proposed 6 inches of growth medium is an adequate cover for the heap because of the potential long-term effects of root growth, erosion, and infiltration. Your cover design should incorporate additional cap material consisting of clay and/or liner material such as HDPE, Geosynthetic, etc. of a sufficient thickness to ensure minimal infiltration of meteoric water into the heap and prevent long term drain down issues. You must provide relevant technical analysis supporting the design specifications of your cap/cover (see #8 below).

9) In order to provide adequate baseline data for proper characterization and handling of mined and processed rock to limit its potential to generate acid or liberate other constituents, including metals, into the environment, the BLM requires the following Rock Characterization analysis and testing information:

<u>Heap Material</u>
Your sampling program must ensure a statistically adequate sample population.
You must also provide a description of sampling procedures including how the samples were selected, collection methods, and sample locations.

I. Mineralogical analysis - A minimum of four representative samples per rock type. A BLM geologist must be present during sample collection - a minimum forty-eight hour advance notification is required.

1. XRD – X-Ray Diffraction
2. XRF – X-Ray Fluorescence (could include use of portable units)
3. Petrology
4. Petrography (incident light, transmitted light)
5. SEM/EDX/NIR/MLA

II. Static testing

1. ABA – Acid/Base Accounting
2. Net acid/alkaline production (AP, NP, NNP)
3. MWMP - Meteoric Water Mobility Procedure (ASTM E-2242-02)
4. NCV – Net Carbonate Value

III. Kinetic Testing

1. Humidity cell/column leach test (ASTM D5744-07)

   Although a test duration as short as 20 weeks may be suitable for some samples, more recent research indicates that test durations well beyond 20 weeks may be required depending on the objectives of the test and the test results. Identified test protocols contain specific criteria to determine when tests may end. **BLM must be consulted prior to terminating the tests. Regardless of the data, 20 weeks is the absolute minimum test period.**

2. BAPP Test- Biological Acid Producing Potential

IV. Infiltration Modeling

1. Heap Leach Draindown Estimation (Modeling required. Can be calculated from worksheets available at the State of Nevada BLM webpage: see http://www.blm.gov/nv/st/en/prog/minerals/mining.html)

<u>Cap/Cover Material</u>

I. Geotechnical Analyses

1. Grain size (USCS)
2. Atterburg limits
3. Initial moisture content
4. Dry bulk density
5. Calculated porosity
6. Constant head analyses for saturated hydraulic conductivity test
7. Hanging column
8. Pressure plate
9. Unsaturated hydraulic conductivity
10. Proctor compaction

II. Infiltration Modeling

1. Draindown Estimation (Can be calculated from worksheets available at the State of Nevada BLM webpage: see http://www.blm.gov/nv/st/en/prog/minerals/mining.html)

10) Please provide a Water Resource Report, characterizing the water resources of the site, prepared by or under the direction of a professional engineer or other ground water

professional. The report should include all of the information required by the Utah Division of Water Quality (DWQ) for their Ground Water Discharge Permit application (Part C.8 - Hydrologic Report). It should also contain the specific elements outlined below:

I. Geology/Hydrogeology
    1. Geology –include maps, cross sections with grids, scales. Structure should include faults, fractures, and joints. Stratigraphy should include geologic formations and thicknesses, soil types and thicknesses, depth to bedrock.
        a. Regional geology
        b. Local geology
    2. Hydrogeology
        a. Areal regional aquifer and ground water conditions (maps, cross sections)
        b. Site specific ground water conditions
        a. Vadose zone
        b. Perched water table
        c. Unconfined water table
        d. Confined water table

II. Springs/Streams and Well Inventories
    1. Location (including UTM coordinates)
    2. Flow/Production
        a. Perennial springs and streams (include historical flows)
        b. Intermittent springs and streams (include historical flows)
        c. Well production (include average/peak or other baseline data)
    3. Quality (chemistry)
    4. Temperature
    5. Well drilling log or geologic log
    6. Water rights
    7. Jurisdictional waters
    8. Habitat types, areal distributions and number of acres (include maps)

III. Hydrologic System
    1. Meteorology (use on-site meteorological station data)
        a. Ambient Temperature (min/max), Relative Humidity, Wind Speed (max gust/hr) & Wind Direction, Total Precipitation, Solar Radiation; at a minimum with a data logger.
    2. Recharge
        a. Type
        b. Distribution
    3. Discharge
        a. Type
        b. Distribution
    4. Potentiometric surface or water table
    5. Groundwater flow
        a. Gradient and flow direction
        b. Velocity
    6. Hydraulic boundary conditions/hydrologic divides
        a. Type
        b. Distribution

IV. Hydrologic Budget (summary of Section III.)

V. Conceptual Groundwater Model

1. Ground and surface water systems (based on site specific field data)
2. Project hydrogeologic setting (relative to regional hydrology)

11) In order to show that the proposed uses and activities will prevent or avoid unnecessary or undue degradation, you must show that they will conform to all applicable federal and state environmental standards by obtaining all required permits and authorizations and meeting the standards required by state and federal law. Copies of the approved permits and any new standards/procedures resulting from these permits should be incorporated into your plan of operations. This includes the ground water discharge permit required by the Utah Department of Environmental Quality and the air quality permit required for your crushing operation. It also includes all the information that has been requested to date by DOGM including the vegetation survey.

In accordance with §3809.412, you are not authorized to engage in any of the activities described in your Plan Amendment until this office determines that it is complete, the appropriate level of environmental review under NEPA is completed, you provide the financial guarantee required under §3809.552, the financial guarantee is accepted and successfully adjudicated, and BLM notifies you that you may begin operations.

In the June 10, 2010, meeting between the BLM, Desert Hawk Gold Corporation (Desert Hawk), and NAE, Rick Havenstrite stated that Desert Hawk would be hiring a consultant to prepare the Environmental Assessment (EA) for the Plan Amendment. As discussed in that meeting, we recommend for your consultant to meet with the BLM prior to beginning work on the EA to outline the scope and format of the NEPA analysis.

Please submit the requested information within 60 days of receipt of this letter. If we do not receive the requested information from you in the allotted time, we will consider your Plan Amendment to be withdrawn. An exception to the 60 day requirement is the Humidity Cell test results which will take longer than 60 days to obtain. Therefore, in the next 60 days, please submit proof than you have begun the Humidity Cell test.

If you have any questions, or require additional information, please contact Stephen Allen or Larry Garahana of my staff at (801) 977-4360 or (801) 977-4371.

Sincerely,

Michael G. Nelson
Assistant Field Manager,
Nonrenewable Resources

cc: UDOGM, Leslie Heppler, 1594 West No.Temple, Ste. 1210# Box 145801, SLC, UT 84114-5801
Mr. O. Jay Gatten, North American Exploration, Inc. 447 North 300 West, Suite #3 Kaysville, Utah 84037-4203

DESERT HAWK GOLD CORPORATION

CACTUS MILL ROCK CHARACTERIZATION TESTS AND ANALYSIS

EXHIBIT 2

CACTUS MILL SAMPLE REPORT

DESERT HAWK GOLD CORPORATION

CACTUS MILL SAMPLING PROGRAM

Yellow Hammer Mine

Tooele County, Utah

Prepared by:

O. Jay Gatten
Utah Professional Geologist #5222768-2250
North American Exploration, Inc.
447 North 300 West, Suite #3
Kaysville, UT 84037

(801) 544-3421

ojgatten@nae-xploration.com

July 7, 2010

INTRODUCTION

Desert Hawk Gold Corporation is in the process of amending a Large Mine Permit for the Cactus Mill located near Gold Hill in Tooele County, Utah. The Mill is located on Federal mill site claims and will be the site of a small copper heap leach operation. The copper ore will come from the Yellow Hammer Mine which is located a few miles away.

In a letter dated June 22, 2010, the US Bureau of Land Management (BLM) requested additional analytical information to characterize the copper ore. A minimum of four (4) representative samples were to be collected in the presence of a BLM geologist.

SAMPLING PROGRAM

The ore samples were collected under the direction of Larry Garahana, BLM geologist, and O. Jay Gatten, Utah Professional Geologist, on June 30, 2010. Also present were Rick Havenstrite (Desert Hawk Gold) and Oren Gatten (North American Exploration). The samples were collected at four (4) sites in the Yellow Hammer Mine area in section 24 of T8S-R18W. The samples are labeled YHA, YHB, YHC and WZA.

At each site two (2) representative composite samples of the copper ore were collected, consisting of a larger sample weighing about 30 pounds for metallurgical and environmental testing and a smaller sample weighing about three (3) pounds for mineral analysis. At each site a photograph and GPS survey reading were taken.

SAMPLE DISPOSITION

The samples were in the custody of O. Jay Gatten and transported to Speedi Pack in Layton, Utah. The larger samples were shipped via DHL to Inspectorate America in Vancouver, BC, Canada on July 6, 2010. The smaller samples were shipped via Fed Ex to American Assay Laboratory in Sparks, NV also on July 6, 2010.

SUPPORTING INFORMATION

The following data are included to document the sampling program:

1. Map of the sample sites
2. Table of GPS survey coordinates for samples
3. Photographs of the sites
4. Sample tickets
5. Chain of Custody Records
6. Sample Transmittal Forms

SUMMARY

Representative samples of the Yellow Hammer Mine ore were collected under the supervision of Larry Garabana (BLM) and O. Jay Gatten (NAE) on June 30, 2010. These samples were in the custody of O. Jay Gatten until they were shipped to Inspectorate America and American Assay Laboratory.

Certification

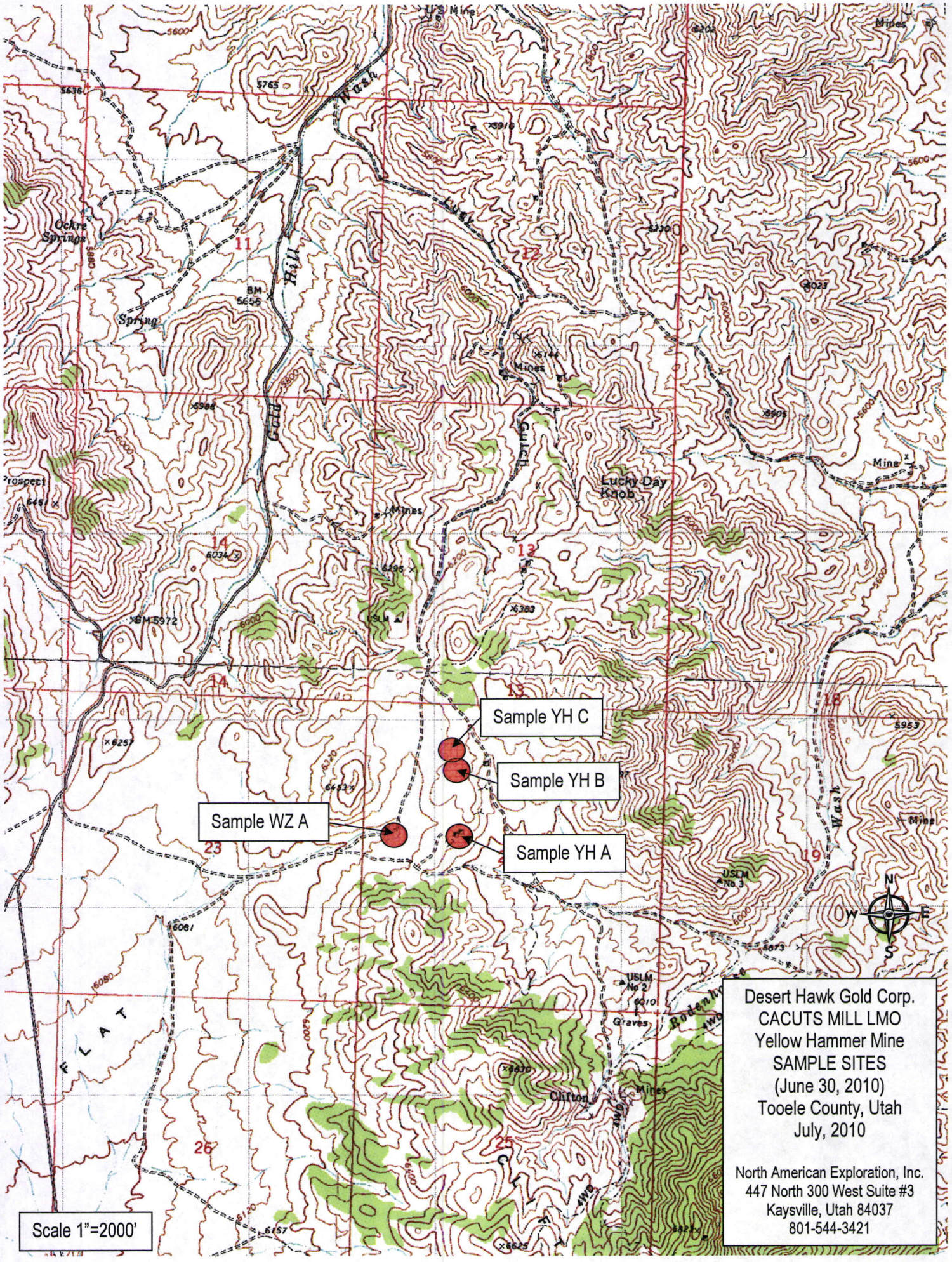
I certify that I have supervised the sampling and shipping for analysis of the following:

Desert Hawk Gold Corporation
Cactus Mill Large Mine Permit Sampling Program
Yellow Hammer Mine
Located in:
T8S-R18W, Section 24, Tooele County, Utah

I certify that to the best of knowledge and belief:

1. The statements of fact contained in this report are true and correct
2. I personally supervised the sampling program and shipped the samples to American Assay Laboratories, Inc. in Sparks, Nevada and Inspectorate America in Vancouver, B.C.
3. I have no present or prospective interest in the property that is the subject of this report, and I have no personal interest with respect to the parties involved.
4. My engagement in the assignment was not contingent upon developing or reporting predetermined results
5. My compensation for completing this assignment is not contingent upon the development or reporting of a predetermined analysis that favors the cause of the client.
6. O. Jay Gatten has conducted various geological and mineral resource studies in the area and is generally familiar with the property that was sampled.
7. My License as a Professional Geologist has not been revoked, suspended, canceled or restricted.
8. O. Jay Gatten is currently a Licensed Professional Geologist in the State of Utah #5222768-2250.

O. Jay Gatten


Sample YH C
Sample YH B
Sample WZ A
Sample YH A
Scale 1"=2000'
Desert Hawk Gold Corp.
CACUTS MILL LMO
Yellow Hammer Mine
SAMPLE SITES
(June 30, 2010)
Tooele County, Utah
July, 2010
North American Exploration, Inc.
447 North 300 West Suite #3
Kaysville, Utah 84037
801-544-3421

DESERT HAWK GOLD CORP
Cactus Mill Site-Large Mine Permit
YELLOW HAMMER MINE SAMPLE SITES

July, 2010

UTM East	UTM North	UTM Zone	UTM Datum	GPS #	Sample #	Date collected	Remarks
259125.6	4444362.9	12	NAD27 ;	049;	YH A	30-JUN-10 11:55:14AM;	Zone A Mine Area
259119.2	4444729.3	12	NAD27 ;	050;	YH B	30-JUN-10 12:09:31PM;	Zone B
259096	4444833.2	12	NAD27 ;	052;	YH C	30-JUN-10 12:17:38PM;	Zone C
258791.3	4444387.5	12	NAD27 ;	054;	WZ A	30-JUN-10 12:38:03PM;	West Zone

Yellow Hammer Mine “A Zone” Sample YHA

Yellow Hammer Mine “A Zone” Oren Gatten

Sample Site YHC looking NE, Oren Gatten

Sample site YHC looking NW

Sample site WZA looking east.
Larry Garahana & Rick Havenstrite

B zone sample YHB looking north

Sample site YHB Larry Garahana, Rick Havenstrite & Oren Gatten, looking NE

Sample site WZA Copper oxide ore

Yellow Hammer Mine Sample, Jay Gatten

Yellow Hammer Mine samples. Larger samples for metallurgical testing, smaller samples for mineral analysis

North American Exploration, Inc.

CLIENT Desert Hawk NO. YHA
PROPERTY Yellow Hammer Mine
DATE 6/30/10 SAMPLER D.J. Gatten
QUAD Gold Hill 7½ (15) Gold Hill
SEC 24 T 8S R 18W PHOTO ✓
Tooele Co, UT

SAMPLE TYPE

ROCK		DRILL	SOIL	STREAM
(Grab)	Outcrop	Core	A	
Chip	Float	Rotary	B	
Channel	Dump		C	

D.H. NUMBER _____ FROM _____ TO _____

SAMPLE DESCRIPTION
Composite sample of "A" Zone - Yellow Hammer Mine
2 Samples GPS # 49
Larry Garahana present
Rick Havenstrite present

	Weak	Mod.	Strong	Description
Silicification				
Argilization				
Fe Oxides				
Sulfides				
Fracturing				

Au Ag As Sb Hg Ba Tl Cu Pb Zn

North American Exploration, Inc.

CLIENT Desert Hawk NO. YHC
PROPERTY Yellow Hammer Mine
DATE 6/30/10 SAMPLER OJ Gatten
QUAD Gold Hill 7½ (15)
SEC 24 T 8S R 18W PHOTO ✓
Tooele County, UT

SAMPLE TYPE

ROCK		DRILL	SOIL	STREAM
(Grab)	Outcrop	Core	A	
Chip	Float	Rotary	B	
Channel	Dump		C	

D.H. NUMBER _____ FROM _____ TO _____

SAMPLE DESCRIPTION
Composite Sample of "C" Zone Yellow Hammer Mine
2 samples ; GPS # 52
Larry Garahana present
Rick Havenstrite present

	Weak	Mod.	Strong	Description
Silicification				
Argilization				
Fe Oxides				
Sulfides				
Fracturing				

Au Ag As Sb Hg Ba Tl Cu Pb Zn

North American Exploration, Inc.

CLIENT Desert Hawk NO. YHB
PROPERTY Yellow Hammer Mine
DATE 6/30/10 SAMPLER OJ Gatten
QUAD Gold Hill 7½ (15)
SEC 24 T 8S R 18W PHOTO ✓
Tooele County, UT

SAMPLE TYPE

ROCK		DRILL	SOIL	STREAM
(Grab)	Outcrop	Core	A	
Chip	Float	Rotary	B	
Channel	Dump		C	

D.H. NUMBER _____ FROM _____ TO _____

SAMPLE DESCRIPTION
Composite Sample of "B" Zone Yellow Hammer Mine
2 samples ; GPS # 50
Larry Garahana present
Rick Havenstrite present

	Weak	Mod.	Strong	Description
Silicification				
Argilization				
Fe Oxides				
Sulfides				
Fracturing				

North American Exploration, Inc.

CLIENT Desert Hawk NO. WZA
PROPERTY Yellow Hammer Mine
DATE 6/30/10 SAMPLER OJ Gatten
QUAD Gold Hill 7½ (15)
SEC 24 T 8S R 18W PHOTO ✓
Tooele County, UT

SAMPLE TYPE

ROCK		DRILL	SOIL	STREAM
(Grab)	Outcrop	Core	A	
Chip	Float	Rotary	B	
Channel	Dump		C	

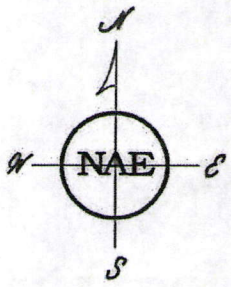
D.H. NUMBER _____ FROM _____ TO _____

SAMPLE DESCRIPTION
Composite sample of "West" Zone
2 samples ; GPS # 54
Larry Garahana Present
Rick Havenstrite Present

	Weak	Mod.	Strong	Description
Silicification				
Argilization				
Fe Oxides				
Sulfides				
Fracturing				

NORTH AMERICAN EXPLORATION, INC.

MINERAL EXPLORATION SERVICES



CHAIN OF CUSTODY RECORD

Sample ID: YHA, YHB, YHC, WZA (4 Samples)
Sample Description: Rock-Metallurgical Testing

Released By: O.Jay Gatten
Name/Company: North American Exploration, Inc.
Signature:
Date/Time: July 6, 2010, 4:45 PM MDT
Shipped/Transferred Via: DHL International WPX
Tracking #: 8670783295, 8670783306, 8670783310 & 8670783321
Notes: Collected near Gold Hill, UT under supervision of Larry Garahana, BLM

Received By: Cam Chaing
Name/Company: Inspectorate America Corporation
Signature:
Date/Time:
Shipped/Transferred Via:
Tracking #:
Notes:

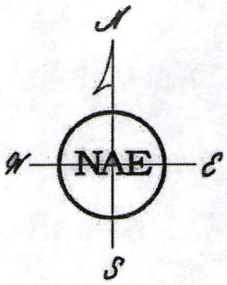
Released By:
Name/Company:
Signature:
Date/Time:
Shipped/Transferred Via:
Tracking #:
Notes:

Received By:
Name/Company:
Signature:
Date/Time:
Shipped/Transferred Via:
Tracking #:
Notes:

447 NORTH 300 WEST, SUITE 3 • KAYSVILLE, UTAH 84037-4203
(801) 546-6453 • FAX: (801) 544-4554 • E-MAIL: nae@nae-xploration.com

NORTH AMERICAN EXPLORATION, INC.

MINERAL EXPLORATION SERVICES



CHAIN OF CUSTODY RECORD

Sample ID: YHA, YHB, YHC, WZA (4 Samples)
Sample Description: Rock-Metallurgical Testing

Released By: O.Jay Gatten
Name/Company: North American Exploration, Inc.
Signature:
Date/Time: July 6, 2010, 4:44 PM MDT
Shipped/Transferred Via: FEDEX Ground Commercial
Tracking #: 042137910442807
Notes: Collected near Gold Hill, UT under supervision of Larry Garahana, BLM

Received By:
Name/Company:
Signature:
Date/Time:
Shipped/Transferred Via:
Tracking #:
Notes:

Released By:
Name/Company:
Signature:
Date/Time:
Shipped/Transferred Via:
Tracking #:
Notes:

Received By:
Name/Company:
Signature:
Date/Time:
Shipped/Transferred Via:
Tracking #:
Notes:

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(801) 546-6453 • FAX: (801) 544-4554 • E-MAIL: nae@nae-xploration.com

SP SAMPLE SUBMITTAL FORM

American Assay Laboratories Inc.
1500 GLENDALE AVE.
SPARKS, NV USA 89431-5902
Phone 1-775-356-0606
Fax 1-775-356-1413
EMAIL: aallabs@nvbell.net

Company: North American Exploration Inc
Contact: Jay Gatten
Billing Address: 447 North 300 West # 3 Kaysville, UT 84037
PROJECT: DHG - Cactus Mill COMPANY PO #:
Telephone: (801) 544-3421 Fax (801) 544-4554
Date Submitted: 7/6/10 AAL Received:
RELEASOR SIGN: OJ Gatten DATE/TIME 7/6/10 4:00pm ACCEPTOR SIGN:

SAMPLE IDENTIFICATION	TYPE	#	ANALYSIS REQUESTED
YHA	Rock	1	BRPP3KG / ICP-2DX
YHB	Rock	1	↓ ↓
YHC	Rock	1	
WZA	Rock	1	
TOTAL NUMBER of SAMPLES 4		4	

TURNAROUD REQUIREMENT

DATA OUTPUT:

Hard Copy: Jay Gatten
North American Exploration 447 N 300 West #3, Kaysville, UT 84037
Phone: (801) 544-3421
Fax: (801) 544-4554
E-Mail: (xls) txt (pdf) acquire xml
OJgatten@nae-xploration.com

PAYMENT TERMS 20 days from invoice date

REPORT IN: PPB[ ] PPM[X] OPT[ ] %[ ]

COARSE REJECTS
[X] Return COD after analysis complete

PULPS
[ ] Discard after one month
[X] Return COD after one month

email is OK

DESERT HAWK GOLD CORPORATION

CACTUS MILL ROCK CHARACTERIZATION
TESTS AND ANALYSIS

EXHIBIT 3

ANALYTICAL INFORMATION

AMERICAN ASSAY LABORATORIES

E-MAIL aallabs@nvbell.net

ADDRESS 1500 Glendale Ave. SPARKS, NV. 89431

2320 Last Chance Rd. ELKO, NV 89801

PHONE 775-356-0606

AAL GROUP

ICP PACKAGE

ICP-2D BOOK PRICE 0.5g $8.70 including digest

ICP-2DX BOOK PRICE 0.5g $15.70 including digest

WEIGHT *0.500g*

DIGEST *The sample is digested with HNO3+HCl for 2 hours in borosilicate(bs)*

ANALYSIS *Digested samples are read on radial ICP*

LIMITATIONS *Aqua Regia digest is partial for many elements.*

Digestion in borosilicate will report some B and Si contamination.

Sparingly soluble salts AgCl, CaSO4, KClO4, PbSO4 will cause low results.

Mineralized samples will cause interference and raise some detection limits.

DETECTION in PPM

			Crustal	2D	2DX
1	Ag	Silver	0.1	0.3	0.1
2	Al	Aluminum	81300	100	100
3	As	Arsenic	5	2	0.5
4	Au	Gold	0.003	2	0.0005
5	B	Boron	3	20	20
6	Ba	Barium	250	1	1
7	Bi	Bismuth	0.2	3	0.1
8	Ca	Calcium	36300	100	100
9	Cd	Cadmium	0.15	0.5	0.1
10	Co	Cobalt	23	1	0.1
11	Cr	Chromium	200	1	1
12	Cu	Copper	70	1	0.1
13	Fe	Iron	50000	100	100
14	Ga	Gallium	15	10	1
15	Hg	Mercury	0.5	1	0.01
16	K	Potassium	25900	100	100
17	La	Lanthanum	18	1	1
18	Mg	Magnesium	20900	100	100
19	Mn	Manganese	1000	2	1
20	Mo	Molybdenum	15	1	0.1
21	Na	Sodium	28300	100	10
22	Ni	Nickel	80	1	0.1
23	P	Phosphorus	1180	10	10
24	Pb	Lead	16	3	0.1
25	S	Sulfur	520	500	500
26	Sb	Antimony	1	3	0.1
27	Sc	Scandium	5	5	0.1
28	Se	Selenium	0.09	5	0.5
29	Sr	Strontium	300	1	1
30	Th	Thorium	12	3	0.1
31	Ti	Titanium	4400	100	10
32	Tl	Thallium	0.6	5	0.1
33	U	Uranium	4	8	0.1
34	V	Vanadium	150	2	2
35	W	Tungsten	69	2	0.1
36	Zn	Zinc	132	1	1

SP089608
FINAL REPORT

Multi Element Package ICP-2DX 0.5 g

AMERICAN ASSAY LABORATORIES
1500 GLENDALE AVE.
SPARKS, NV USA 89431-5902
Ph.(775) 356-0606
Fax.(775) 356-1413
EMAIL: AALLABS@NVBELL.NET

NORTH AMERICAN EXPLORATION, INC.

COPIES TO : JAY GATTEN

CLIENT REFERENCE No: YHA THRU WZA

No. SAMPLES : 4

MAIN SAMPLE TYPE : ROCK

RECEIVED : 9-Jul-2010

REPORTED : 22-Jul-2010

COMPANY DISCLAIMER :-
When small samples are submitted, AAL may process the sample at smaller then specified weights to retain some pulp for quality control reassay. When Values exceed upper limits, AAL may run an Over Range analysis, to establish a more accurate value. An additional cost may apply.

NEVADA LEGISLATIVE DISCLAIMER :-
The results of this assay were based solely upon the content of the sample submitted. Any decision to invest should be made only after the potential investment value of the claim or deposit has been determined based on the results of assays of multiple samples of geological materials collected by the prospective investor or by a qualified person selected by him and based on an evaluation of all engineering data which is available concerning any proposed project. Nevada State Law NRS 519.130.

ANALYSIS	Dry Wt	Ag	Al	As	Au	B	Ba	Bi	Ca	Cd	Co	Cr	Cu	Fe	Ga	Hg	K	La	Mg	Mn	Mo	Na	Ni	P	Pb	S
METHOD	Weight	CP-2DX	CP-2DX	CP-2DX	CP-2DX	CP-2DX	CP-2DX	CP-2DX	CP-2DX	CP-2DX	CP-2DX	CP-2DX	CP-2DX	CP-2DX	CP-2DX	CP-2DX	CP-2DX	CP-2DX	CP-2DX	CP-2DX	CP-2DX	CP-2DX	CP-2DX	CP-2DX	CP-2DX	CP-2DX
UNIT	lbs	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
LOWER LIMIT	1	0.1	100	0.5	0.0005	20	1	0.1	100	0.1	0.1	1	0.1	100	1	0.01	100	1	100	1	0.1	10	0.1	10	0.1	500

ANALYSIS	Sb	Sc	Se	Sr	Th	Ti	Tl	U	V	W	Zn	Cu
METHOD	ICP-2DX	CP-2DX	CP-2DX	CP-2DX	CP-2DX	CP-2DX	CP-2DX	CP-2DX	CP-2DX	CP-2DX	CP-2DX:	GRADE
UNIT	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
LOWER LIMIT	0.1	0.1	0.5	1	0.1	10	0.1	0.1	2	0.1	1	10

SIGNATORY

ANALYSIS ICP

Cover Page

SP089608
FINAL REPORT

AMERICAN ASSAY LABORATORIES
1500 GLENDALE AVE.
SPARKS, NV USA 89431-5902
Ph.(775) 356-0606
Fax.(775) 356-1413
EMAIL: AALLABS@NVBELL.NET

	Abbreviation	Definition
Preparation	DIP	Sample Destroyed in Preparation
	DIS	Sample Destroyed in Shipment
	ISS	Insufficient Sample Submitted
	SDI	Sample Diesel Impregnated
	SHI	Sample Hydraulic Impregnated
	SNR	Sample Not Received
Analysis	STD - ??	International Reference Material Standard
	STD - AAL##	AAL generated standard material
	BLANK	AAL Laboratory Silica Blank
	DTF	Data to Follow
	DL	Detection Limit of Method
	< or -	Less Than Detection Limit of Method
	>	Greater than Upper Limit of Method
	N/A	Not Analyzed
	NR	Not Reported
	(R) column	Laboratory repeat weigh, digestion, analysis from original pulp or reject resplit
	D or -D after Sample ID	Client submitted duplicate rig split sample
	-R after Sample ID	Repeat analysis from original pulp reweigh, digestion and analysis
	-X after Sample ID	Repeat analysis from reject resplit, preparation, weigh, digestion and analysis
	ppb	Parts per Billion 0.001 ppm = 1 ppb
	ppm	Parts per Million 1 ppm = 1 mg/Kg
	OPT	Troy Ounces per Short Ton(2,000 lbs)(1 ppm= 0.02917 OPT)
	Oz	Troy Ounce = 31.103 grams
	%	Percent 1%=10,000 ppm
	g	Grams 1g=0.001 kilogram
	mg	Milligrams 1mg=0.001grams
	Kg	Kilograms 1Kg=1000grams
	lbs	Pounds 1lb=0.454kilogram
Method	FA##	Fire Assay Lead Collection - ## sample weight in grams
	GRAV	Gravimetric (Weighed) finish
	+ ###	Plus Fraction (Retained on top of Mesh) ###Screen Size
	- ###	Minus Fraction (Passed through Mesh) ###Screen Size
	CN	Cyanide Extraction
	ORE GRADE	2g sample made to 1000ml volumetric for results > upper limit of method
	Ox-H2SO4 or -HCl	Dilute acid leach for oxide fraction in copper or molybdenum analysis
	QLA	Dilute 10%H2SO4/0.5%Fe2(SO4)3 30C leach for acid soluble copper
	QLT	Dilute 15%H2SO4 30C leach for acid soluble copper
	SAP	Dilute 5%H2SO4/0.5%Fe2(SO4)3 85C leach for acid soluble & chalcocite copper
	D#A	Digestion #=2,3 or 4 Acids
		2A=HCl/HNO3 3A=HCl/HNO3/HClO4 4A=HCl/HNO3/HF/HClO4
	HCl	Hydrochloric Acid(37%w/v) Boiling Point 109C
	HF	Hydrofluoric Acid(48%w/v) Boiling Point 108C Extreme Health Hazard
	HClO4	Perchloric Acid(69%w/v) Boiling Point 203C Extreme Fire/Explosion Hazard
	HNO3	Nitric Acid(69%w/v) Boiling Point 121C
	H2SO4	Sulfuric Acid(98% w/v) Boiling Point 338C
	ICP-xA or -xD	ICP-OES and/or ICP-MS analysis using x=2, 3 or 4 acid digestion
	LiBO2-C	Lithium Metaborate fusion in Carbon crucible
	Na2O2-C	Sodium Peroxide fusion in Carbon crucible
	Na2O2-Zr	Sodium Peroxide fusion in Zirconium crucible
Technique	AAS	Atomic Absorption Spectroscopy
	ICP-OES	Inductively Coupled Plasma Optical Emission Spectroscopy
	ICP-MS	Inductively Coupled Plasma Mass Spectroscopy
	RG	Research Grade (Low detection limit ICP-OES)
	UT	Ultra Trace (ICP-OES+ICP-MS analyses)
	XRF-ED or -WD	X-Ray Flourescence (-ED = Energy Dispersive) (-WD = Wavelength Dispersive)
	XRD	X-Ray Diffraction
	ELTRA-I	Carbon & Sulfur infrared detection analyzer inductive heating
	ELTRA-R	Carbon, Hydrogen & Sulfur infrared detection analyzer resistance furnace
	LECO-I	Nitrogen & Oxygen infra red detection analyzer inductive heating
	MW	Microwave Digestion (-PT is at 1500psig and 300C)
	SG-WD or -HP	Specific Gravity-WD=Water Displacement -HP=Helium Pycnometer 1g/cm3=62.4lbs/ft3

SP089608

FINAL REPORT

CLIENT : NORTH AMERICAN EXPLORATION, INC.
PROJECT : DHG-CACTUS MILL
REFERENCE : YHA THRU WZA
REPORTED : 22-Jul-2010

SAMPLES	Dry Wt Weight 1 lbs	Ag ICP-2DX 0.1 ppm	Al ICP-2DX 100 ppm	As ICP-2DX 0.5 ppm	Au ICP-2DX 0.0005 ppm	B ICP-2DX 20 ppm	Ba ICP-2DX 1 ppm	Bi ICP-2DX 0.1 ppm	Ca ICP-2DX 100 ppm	Cd ICP-2DX 0.1 ppm	Co ICP-2DX 0.1 ppm	Cr ICP-2DX 1 ppm	Cu ICP-2DX 0.1 ppm	Fe ICP-2DX 100 ppm	Ga ICP-2DX 1 ppm	Hg ICP-2DX 0.01 ppm	K ICP-2DX 100 ppm	La ICP-2DX 1 ppm
YHA	3	2.0	13200	114.4	0.1000	-20	61	1.5	16940	0.2	50.6	36	>10000	44550	4	-0.01	2453	118
YHA-X		1.9	11880	93.8	0.0955	-20	50	1.5	12650	0.1	43.6	28	>10000	36190	3	-0.01	2178	106
YHB	2	5.8	9306	24.6	0.0215	-20	57	0.7	60060	0.8	49.6	31	>10000	60830	3	-0.01	2310	243
YHB-X		5.4	8316	22.0	0.0217	-20	53	0.6	59070	0.8	46.8	29	>10000	57310	3	-0.01	2035	199
YHC	2	15.9	15840	68.3	0.0590	-20	59	32.1	5797	0.9	37.3	42	>10000	62150	3	0.02	1716	146
YHC-X		16.3	13200	63.5	0.0685	-20	70	26.7	5797	1.0	33.9	38	>10000	55770	3	0.04	1694	120
BLANK		-0.1	-100	-0.5	-0.0005	-20	-1	-0.1	-100	-0.1	-0.1	-1	1.6	251	-1	0.03	-100	-1
WZA	2	17.0	1441	322.3	0.1755	-20	48	3.6	90310	1.1	32.8	16	>10000	48840	-1	0.12	195	7
WZA-X		19.5	1342	342.1	0.1510	-20	59	2.8	93280	1.0	35.2	17	>10000	51700	-1	-0.01	157	5
STD		>100	4961	34.3	0.0399	69	71	931.7	35530	1.2	6.8	135	2563.0	29370	2	0.22	2046	7

SP089608

FINAL REPORT

CLIENT : NORTH AMERICAN
PROJECT : DHG-CACTUS MILL
REFERENCE : YHA THRU WZA
REPORTED : 22-Jul-2010

SAMPLES	Mg ICP-2DX 100 ppm	Mn ICP-2DX 1 ppm	Mo ICP-2DX 0.1 ppm	Na ICP-2DX 10 ppm	Ni ICP-2DX 0.1 ppm	P ICP-2DX 10 ppm	Pb ICP-2DX 0.1 ppm	S ICP-2DX 500 ppm	Sb ICP-2DX 0.1 ppm	Sc ICP-2DX 0.1 ppm	Se ICP-2DX 0.5 ppm	Sr ICP-2DX 1 ppm	Th ICP-2DX 0.1 ppm	Ti ICP-2DX 10 ppm	Tl ICP-2DX 0.1 ppm	U ICP-2DX 0.1 ppm	V ICP-2DX 2 ppm	W ICP-2DX 0.1 ppm
YHA	8261	527	45.1	679	82.1	1320	38.9	-500	19.2	3.4	3.0	92	40.5	120	-0.1	8.9	27	289.6
YHA-X	7227	432	37.9	604	72.4	1188	28.8	-500	19.7	2.9	2.6	72	40.6	111	0.1	7.9	25	237.1
YHB	3168	586	11.2	546	32.1	633	17.7	-500	1.2	1.7	0.9	202	26.1	82	-0.1	-0.1	24	42.2
YHB-X	3003	575	10.9	488	30.3	587	16.5	-500	1.6	1.5	-0.5	182	27.4	76	-0.1	-0.1	25	31.3
YHC	10131	721	455.0	656	125.4	1320	52.7	-500	0.6	3.9	1.2	36	33.1	157	0.1	3.9	24	12.7
YHC-X	8382	760	407.8	705	106.2	1320	47.4	-500	-0.1	3.6	1.0	35	33.7	175	0.1	4.6	23	11.2
BLANK	-100	1	0.3	42	0.1	-10	0.5	-500	-0.1	-0.1	-0.5	-1	0.5	-10	-0.1	-0.1	-2	0.1
WZA	3883	646	14.5	152	26.7	521	17.6	-500	14.3	1.0	2.2	190	1.3	61	0.6	6.0	14	21.0
WZA-X	3894	724	14.2	133	27.3	542	18.0	-500	15.8	1.0	1.9	194	0.9	57	0.8	4.8	14	26.6
STD	4510	392	531.2	1020	99.9	525	2288.0	11110	3.7	1.2	3.6	79	3.0	127	0.3	5.2	3	9.3

SP089608

FINAL REPORT

CLIENT : NORTH AMERICAN
PROJECT : DHG-CACTUS MILL
REFERENCE : YHA THRU WZA
REPORTED : 22-Jul-2010

SAMPLES	Zn ICP-2DX 1 ppm	Cu ORE GRADE 10 ppm
YHA	266	29400
YHA-X	217	
YHB	144	27600
YHB-X	128	
YHC	898	11000
YHC-X	764	
BLANK	-1	
WZA	263	21200
WZA-X	261	
STD	360	

Exploration and Mining Services

Schedule of Rates - CAD

Effective January 1, 2010 (Supersedes Rate Schedule Dated January 1, 2009)

INSPECTORATE

www.inspectorate.com

ISO:9001-2008

Environmental

Static Test - Acid Base Accounting (ABA)

	Description	Rate	Code
ABA	Paste pH Total Sulfur Neutralization Potential (NP) Maximum Potential Acidity (MPA) Net Neutralization Potential (NNP)	$63.00	E105
Modified ABA	As above but measures and uses sulfide in ABA calculation	$84.00	E105M
	Inorganic Carbon	$22.05	C-IN-OR

Kinetic Test - Humidity Cell

Parameter of Leachate analysis (weekly)	Rate	Code
pH	$8.40	E318
Conductivity	$8.40	E309
Acidity as CaCO3	$15.75	E301
Alkalinity	$15.75	E302
Sulfate	$15.75	E323
ICP Package for Metals	$42.00	E1728
ICP Multi-Element Water Package	$15.75	P1703
Particle size - Sand, Silt, Clay in Percent	$105.00	E206
Original Moisture content	$8.10	E207
Monthly Summary Report	$26.50/cell	E208

Full kinetic ARD tests performed by our metallurgical testing department, (humidity cell or column) - contact for quotation

Environmental water analysis - ICP package for the mining industry.

Analyte	Detection limit (µg/L*)			Rate	Code
Ag	0.05 - 5,000	Mn	0.05 - 5,000	$45.00	E-ICP
Al	1 - 100,000	Mo	0.1 - 10,000		
As	1 - 100,000	Na	50 - 500,000		
B	20 - 100,000	Ni	0.2 - 20,000		
Ba	0.05 - 5,000	P	20 - 500,000		
Be	0.05 - 5,000	Pb	0.1 - 20,000		
Bi	0.05 - 5,000	Sb	0.05 - 5,000		
Ca	1 - 500,000	Se	0.5 - 50,000		
Cd	0.05 - 5,000	Si	1 - 500,000		
Co	0.02 - 2,000	Sn	0.05 - 5,000		
Cr	0.5 - 50,000	Sr	0.01 - 1,000		
Cu	0.1 - 10,000	Ti	10 - 100,000		
Fe	10 - 500,000	Tl	0.01 - 1,000		
Hg	0.1 - 100,000	U	0.02 - 10,000		
K	50 - 500,000	V	1 - 100,000		
Li	1 - 500,000	Zn	0.5 - 50,000		
Mg	50 - 500,000				

Speciation (carbon/sulfur/iron)

Analyte	Species/Type	Concentration	Detection range (%)	Rate	Code
Carbon	Total	Ore Grade	0.01 - 20	$11.55	C-LECO
	Inorganic	Ore Grade	0.01 - 20	$22.05	C-IN-OR
	Graphite	Ore Grade	0.01 - 20	$22.05	C-GP-OR
	Organic	Ore Grade	0.01 - 20	$22.05	C-OG-OR
	Package: Carbon Suite	Total, Inorganic, Graphite, Organic		$68.25	C-PKG
	Graphite	Concentrate	10 - 100	$52.50	C-GP-CON
Sulfur	Total	Ore Grade	0.01 - 100	$31.50	S-GV-OR
	Elemental	Ore Grade	0.01 - 100	$26.25	S-EL-OR
	Sulfide	Ore Grade	0.01 - 100	$26.25	S-SD-OR
	Sulfate	Ore Grade	0.01 - 100	$16.80	S-SF-OR
	Package: Sulfur Suite	Total, Elemental, Sulfide, Sulfate		$84.00	S-PKG
Sulfur by acid leach	Sulfate sulfur by Na_2CO_3 leach/ICP finish		0.01 - 20	$15.75	S-SF-NA
	Sulfate sulfur by HCl leach/ICP finish		0.01 - 20	$15.75	S-SF-HCL
	Sulfide sulfur by HNO_3 leach/ICP		0.01 - 20	$15.75	S-SD-HNO
	Sulfide sulfur by Na_2CO_3 leach/LECO finish		0.01 - 20	$23.60	S-SD-LECO
Carbon & Sulfur LECO Analysis	Carbon	Ore Grade	0.01 - 20	$11.55	C-LECO
	Sulphur	Ore Grade	0.01 - 20	$11.55	S-LECO
	Carbon & Sulphur	Ore Grade	0.01 - 20	$17.30	CS-LECO
Carbon Metallic Sample		Trace	0.001 - 5	$21.00	C-M-LECO
Sulfur Metallic Sample		Trace	0.001 - 5	$21.00	S-M-LECO
Carbon & Sulfur Metallic Sample		Trace	0.001 - 5	$31.50	CS-M-LECO
Iron	Total	Concentrate	0.01 - 100	$36.75	Fe-CON
	Ferrous	Concentrate	0.01 - 100	$16.80	Fe2-CON
	Ferric	Concentrate	0.01 - 100	$47.25	Fe3-CON
	Package: Iron Suite	Total, Ferrous, Ferric		$52.50	Fe-PKG

Certificate of Analysis

10-338-01427-01

Inspectorate America Corporation
605 Boxington Way Suite 101
Sparks, Nevada 89434 USA
Phone: 775.359.6311

Distribution List

Attention: Rick Havenstrite
1290 Holcomb Ave.
Reno, Nevada 89502
Phone: 775.337-8057
EMail: rickh@odcnv.com

Submitted By: **Desert Hawk Gold Corp.**
1290 Holcomb Ave.
Reno, Nevada 89502

Attention: **Rick Havenstrite**

Description: **YHA to WZA**

Date Received: 07/23/2010
Date Completed: 08/02/2010
Invoice: 338017313

Samples	Type	Preparation Description
4	Pulp	Analyzed as received, no sample prep performed

Method	Description
E105	Acid Base Accounting (ABA)
H2O-ICP	Water analyses by ICP-OES scan
NCV	Net carbonate value (calculated)

The results of this assay were based solely upon the content of the sample submitted. Any decision to invest should be made only after the potential investment value of the claim or deposit has been determined based on the results of assays of multiple samples of geologic materials collected by the prospective investor or by a qualified person selected by him and based on an evaluation of all engineering data which is available concerning any proposed project. For our complete terms and conditions please see our website at www.inspectorate.com.

For and on behalf of: ***Inspectorate America Corporation***

By

Richard Thorneloe, General Manager

INSPECTORATE
605 Boxington Way Suite 101
Sparks, Nevada 89434 USA

Certificate of Analysis

10-338-01427-01

Desert Hawk Gold Corp.
1290 Holcomb Ave.
Reno, Nevada 89502

Sample Description	Ex.Fluid H2O-ICP	pH-TCLP H2O-ICP	Al H2O-ICP mg/L 0.05	Sb H2O-ICP mg/L 0.05	As H2O-ICP mg/L 0.03	Ba H2O-ICP mg/L 0.005	Bi H2O-ICP mg/L 0.1	B H2O-ICP mg/L 0.01	Cd H2O-ICP mg/L 0.005	Ca H2O-ICP mg/L 0.05	Cr H2O-ICP mg/L 0.01	Co H2O-ICP mg/L 0.01	Cu H2O-ICP mg/L 0.01	Fe H2O-ICP mg/L 0.01	Pb H2O-ICP mg/L 0.05
YHA	1	9.0	0.16	0.06	0.41	6.090	<0.1	1.64	<0.005	>9999	0.02	2.82	1200.08	0.05	0.30
YHB	1	8.8	4.45	<0.05	0.27	39.903	<0.1	3.84	<0.005	3829.73	<0.01	6.29	4562.80	0.30	0.67
YHC	1	9.0	11.17	<0.05	0.66	17.278	<0.1	2.45	0.149	3261.18	0.04	1.35	3919.79	0.36	0.96
WZA	2	8.9	<0.05	0.33	0.06	16.376	<0.1	2.45	<0.005	>9999	0.02	7.88	3463.32	0.35	0.87

INSPECTORATE

605 Boxington Way Suite 101
Sparks, Nevada 89434 USA

Certificate of Analysis

10-338-01427-01

Desert Hawk Gold Corp.
1290 Holcomb Ave.
Reno, Nevada 89502

Sample Description	Li H2O-ICP mg/L 0.02	Mg H2O-ICP mg/L 0.1	Mn H2O-ICP mg/L 0.005	Hg H2O-ICP mg/L 0.02	Mo H2O-ICP mg/L 0.01	Ni H2O-ICP mg/L 0.01	P H2O-ICP mg/L 0.1	K H2O-ICP mg/L 2	Se H2O-ICP mg/L 0.05	Si H2O-ICP mg/L 0.05	Ag H2O-ICP mg/L 0.02	Na H2O-ICP mg/L 0.2	Sr H2O-ICP mg/L 0.005	Tl H2O-ICP mg/L 0.2	Sn H2O-ICP mg/L 0.1
YHA	0.24	430.10	120.027	0.65	0.05	0.96	<0.1	141	<0.05	118.14	0.06	33012.9	36.579	4.9	<0.1
YHB	0.45	129.68	87.345	<0.02	0.08	2.70	0.4	166	<0.05	203.76	0.14	32684.2	12.072	4.6	<0.1
YHC	0.48	140.29	76.034	<0.02	0.11	2.55	<0.1	203	<0.05	162.04	0.80	30256.6	9.609	3.6	<0.1
WZA	0.39	569.89	341.902	<0.02	<0.01	1.70	0.6	44	<0.05	328.07	0.31	29.1	65.069	12.2	0.2

INSPECTORATE

605 Boxington Way Suite 101
Sparks, Nevada 89434 USA

Certificate of Analysis

10-338-01427-01

Desert Hawk Gold Corp.
1290 Holcomb Ave.
Reno, Nevada 89502

Sample Description	V H2O-ICP mg/L 0.01	Zn H2O-ICP mg/L 0.005	pH E105	S-Tot E105	NP E105 Kg/MT 0.01	MPA E105 Kg/MT 0.01	NNP E105 Kg/MT -1000	NCV NCV -10
YHA	0.90	9.220	7.95	0.03	42.36	0.78	41.58	2.08
YHB	0.31	23.361	8.09	0.01	17.14	0.41	16.73	1.28
YHC	0.33	44.393	8.28	0.02	21.06	0.66	20.40	0.58
WZA	1.21	32.257	8.23	0.01	143.76	0.25	143.51	5.56

DESERT HAWK GOLD CORPORATION

CACTUS MILL ROCK CHARACTERIZATION
TESTS AND ANALYSIS

EXHIBIT 4

BLM WATER RESOURCE DATA
AND
ANALYSIS POLICY FOR MINING ACTIVITIES

http://www.blm.gov/pgdata/etc/medialib/blm/nv/minerals/mining.Par.42873.File.dat/WaterResDataPolicyForMining.pdf

Nevada Bureau of Land Management Water Resource Data and Analysis Policy for Mining Activities

ISSUE: The use and protection of water resources is an important environmental and economic issue. As mining has the potential to have significant quality and quantity impacts to the State of Nevada water resources, it is important and necessary that the Bureau of Land Management (BLM) adequately address water resource concerns in the review of all proposed mining plans of operations conducted under 43 CFR Subparts 3802 and 3809 - Surface Management Regulations. The goals of this policy are:

To ensure the health of the land and water resources;
To use good science in making decisions; and
To collaborate with appropriate Federal, State, local and tribal agencies and other affected interests.

POLICY: It is the policy of the Nevada BLM to ensure relevant water resource concerns are adequately analyzed. The Nevada BLM Water Resource Data and Analysis Policy for Mining Activities requires that when reviewing a plan of operations, relevant water-resource issues will be addressed in the plan and the associated National Environmental Policy Act (NEPA) document.

It is also the policy of the Nevada BLM to collaborate with the appropriate State regulatory agencies, specifically the State regulatory agencies with water resource responsibilities, e.g., Nevada Department of Conservation and Natural Resources (NDCNR), Division of Environmental Protection (NDEP) and Division of Water Resources (NDWR). Where applicable, the BLM will utilize the State environmental regulatory requirements, guidance, and standards as a base for analysis and/or review. In certain situations, BLM may evaluate potential impacts as a level of detail or breadth of analysis that exceeds State requirements. For example, the BLM might require a detailed geotechnical report associated with infiltration efficiency. Such departures should be coordinated with the appropriate State agency. In addition, when BLM applies an analysis that exceeds State requirements, the BLM will ensure the departure is so noted in the analysis, review and/or approval.

IMPLEMENTATION: Attachment 1, "Nevada BLM Water Resource Data and Analysis Guide for Mining Activities" is intended as a flexible document to aid in meeting the requirements of this policy. The appropriateness of the individual discussions will depend on the issues being addressed in the specific mining/NEPA document. These guidelines will evolve as new situations are encountered. Comments will be continually solicited from field offices and the public to keep the guidance updated.

Attachment 2 provides a table of the most useful and relevant references on groundwater modeling and monitoring, aquifer testing, and analysis, and acid rock drainage testing and analysis. Also, a report titled "State of Nevada Acid Rock Drainage Testing Requirements" was distributed to all field offices under Information Bulletin NV-96-097. This report provides information on the specific State requirements associated with acid rock drainage testing.

The Nevada BLM Water Resource Data and Analysis Policy for Mining Activities and the associated guidance documents provide for the implementation of the Bureaus Acid Rock Drainage Policy, as called for in the Washington Office Instruction Memorandum 96-79, issued April 2, 1996. Copies of all relevant policies and associated guidance documents should be made available to interested parties.

CONTACT PERSON: Questions concerning this policy should be directed to Dr. Tom Olsen, Division of Minerals Management at (775) 861-6451.

Attachment 1
NEVADA BUREAU OF LAND MANAGEMENT WATER RESOURCE DATA AND ANALYSIS GUIDE FOR MINING ACTIVITIES

The following guidelines are provided to facilitate the implementation of the Nevada Bureau of Land Management (BLM) Water Resource Data and Analysis Policy for Mining Activities and the Bureau Acid Rock Drainage Policy for mining activities conducted

under 43 CFR Subparts 3802 and 3809 - Surface Management Regulations. The guidance document is intended as a flexible document, and all sections of this guide may not apply to every mining operation. For example, there may be projects where the mining will not intercept the water table. In such an instance, some of the information elements from this guide may not be necessary. If there is any indication of potential mine operation/water resource conflicts, specific water-resource data-collection, testing and modeling efforts should be evaluated by the BLM, in coordination with the State and the mining company.

Up-front coordination with the public (operators, other agencies, special interest groups and general public) on all water-related issues concerning plans of operations and associated National Environmental Policy Act (NEPA) analyses is an important component to successfully implementing the Nevada BLM Water Resource Data and Analysis Policy for Mining Activities and the elements of this guide. This policy and guide should be made available to the public as part of up-front and ongoing coordination and analysis procedures.

This guide contains six sections, Baseline Water Resource Data, Preliminary Plan of Operations Review, Geochemical Testing and Groundwater Flow Modeling, Geologic Hazards, Monitoring, and Nevada Laws and Regulations. The appropriateness of the individual discussions in this guide will depend on the issues being addressed in the specific mining/NEPA document. This guide should be used in conjunction with Nevada Manual Handbook Supplement H-3801-1 - Surface Management of Mining Operations and the Nevada Cyanide Management Plan.

Baseline Water Resource Data

Since the development of the baseline water resource data is an intensive, costly and time-consuming process, the BLM should make an initial determination as to the scope and nature of the required baseline water resource inventory. Past experience has shown that a baseline water resource inventory will take longer to develop than the required cultural resource evaluation. To expedite the inventory effort, mining companies should be counseled on gathering baseline water resource data as part of their exploration program and mining operation. Such efforts should follow available guidelines identifying the proper procedures for collecting baseline data to ensure adequacy of the data. Every effort should be made to ensure that the collection of baseline water resource data is coordinated with the State of Nevada Water Pollution Control Permit. The required baseline work should be documented in the Preparation Plan for the proposed project's NEPA documentation. At that time, the BLM should include a determination as to the boundary of the Hydrologic Study Area. The following baseline water resource information would normally be collected, analyzed and reported.

Attachment I

I. Geology/Hydrogeology

- A. Vertical and Lateral Aquifer Definition
- B. Saturated Thickness of the Aquifer
- C. Aquifer Hydraulic Characteristics
- D. Geologic Map

II. Spring, Streams and Well Inventory

- A. Location
- B. Flow, Production, Springs, Streams, Wells
  1. Perennial (to include historical flows)
  2. Intermittent
  3. Well Production

C. Quality (Chemistry)

D. Temperature

E. Well Drilling Log or Geologic Log

F. Water Rights

G. Jurisdictional Waters

H. Habitat Types
   1. Extent of riparian areas

III. Hydrologic System

A. Meteorology

B. Recharge
   1. Type
   2. Distribution

C. Discharge
   1. Type
   2. Distribution

D. Potentiometric Surface or Water Table

E. Groundwater Flow
   1. Gradient
   2. Velocity

F. Hydraulic Boundary Conditions/Hydrologic Divides
   1. Type
   2. Distribution

IV. Hydrologic Budget

V. Conceptual Groundwater Model

A. Ground and Surface Water Systems
   (Based on available pre-field data)

B. Project Hydrogeologic Setting

Preliminary Plan of Operations Review

When reviewing the plan of operations to identify areas of potential environmental effects, the following checklist of subject areas should be considered and may need to be evaluated as part of a preliminary review.

I. Waste Rock Dumps

A. Water Quality
   1. Acid Rock Drainage/Generation
      a. Background pH Level
      b. Leachate
      c. Neutralization Potential, e.g. Carbonates

   2. Storm Water Runoff
      a. Sediment Control
      b. Erosion Control

B. Potential Resource Conflicts
   1. Surface Water Resources
   2. Ground Water Resources
   3. Threatened, Endangered, Candidate or Sensitive Species

4. Wildlife
5. Fisheries
6. Vegetation/Riparian
7. Habitat
8. Other

II. Mill/Processing Facilities

A. Water Quality
1. Acid Rock Generation
2. Storm Water Runoff

B. Potential Resource Conflicts
1. Surface Water Resources
2. Ground Water Resources
3. Threatened, Endangered, Candidate or Sensitive Species
4. Wildlife
5. Fisheries
6. Vegetation/Riparian
7. Habitat
8. Other

III. Tailings and Heaps

A. Water Quality
1. Acid Rock Generation Potential
2. Process Water Drainage Potential
3. Storm Water Runoff

B. Potential Resource Conflicts
1. Surface Water Resources
2. Ground Water Resources
3. Threatened, Endangered, Candidate or Sensitive Species
4. Wildlife
5. Fisheries
6. Vegetation
7. Habitat
8. Other

IV. Dewatering

A. Lowering the Water Table
1. Drawdown Area (cone of depression)
2. Reduction in Base flow
    a. Springs
    b. Streams
3. Recovery Period/Level
4. Impact to Aquifers
5. Subsidence Potential
6. Ground water flow balance into and out of Pit

B. Potential Resource Conflicts
1. Surface Water Resources
2. Ground Water Resources
3. Threatened, Endangered, Candidate or Sensitive Species
4. Wildlife
5. Fisheries
6. Vegetation
7. Habitat
8. Other

V. Water Disposal

A. Surface Discharge
1. Water Quality
2. Interbasin Transfer
3. Flood Capacity

4. Siltation
5. Erosion
6. Infiltration Rates
7. Proposed receptacle for discharge water
8. Fluvial Geomorphology

B. Infiltration/Reinjection
1. Reinjection Well Design
2. Infiltration Basin Design
3. Efficiency of Method
4. Water Quality
5. Interbasin Transfer
6. Evaporative Loss
7. Surface Disturbance
8. Increase in Base flow
9. Rate of Saturation/Mounding

C. Other Disposal Methods
1. Irrigation
2. Agriculture/Livestock
3. Wetlands/Jurisdictional Waters
4. Commercial/Industrial

D. Potential Resource Conflicts
1. Surface Water Resources
2. Ground Water Resources
3. Threatened, Endangered, Candidate or Sensitive Species
4. Wildlife
5. Fisheries
6. Vegetation
7. Habitat
8. Other

VI. Pit Infilling/Lake Development/Backfilling

A. Water Quality
1. Pre-Mining
2. Post-Mining

B. Evaporative Loss (Pit Lake Water Budget)

C. Potential for Down Gradient Impacts

D. Recharge

E. Consumption
1. Livestock
2. Wildlife
3. Human (drinking water)

F. Potential Resource Conflicts
1. Surface Water Resources
2. Ground Water Resources
3. Threatened, Endangered, Candidate or Sensitive Species
4. Wildlife
5. Fisheries
6. Vegetation
7. Habitat
8. Other

VII. Potential Cumulative Effects

A. Water Resources
B. Ecological Risk
C. Other

VIII. Leaks and Spills

- A. Hazardous Substances
  1. Prevention Measures
  2. Contingency Plan
  3. Clean-up/Disposal
- B. Non-Hazardous Substances

IX. Federal/State Requirements

- A. State Permitting
  1. Mining Water (Water Pollution Control, Etc.)
  2. Groundwater
  3. Underground Injection
  4. National Pollutant Discharge Elimination System (NPDES) (Clean Water Act)
  5. Storm Water
  6. Rapid Infiltration Basins
- B. Federal Laws and Regulations
  1. Clean Water Act
  2. Safe Drinking Water Act
  3. Endangered Species Act
  4. Other
- C. NEPA Review
- D. Bonding/Mitigation
  1. Pre-Patent
  2. Post-Patent
- E. Water Rights

X. Coordination

- A. Federal Agencies
  1. Fish and Wildlife Service
  2. Environmental Protection Agency
  3. Army Corps of Engineers
  4. Other Agencies
- B. Tribal Agencies
- C. Nevada State Agencies
  1. Division of Environmental Protection
     a. Bureau of Water Pollution Control
     b. Bureau of Mining Regulation and Reclamation
  2. Division of Water Resources
  3. Division of Health, Bureau of Health Protection Services
  4. Division of Wildlife
- D. Other Affected Parties

Geochemical Testing and Water Resource Modeling

Based on the review of the plan of operations and baseline data, including the water resources inventory, the BLM will be able to assess the extent of the potential mine operations/water resource conflicts and any geochemical testing and water resources information needs. This evaluation should include a determination of whether the existing geochemical testing and water resources modeling, and/or those being proposed by the mine company, are adequate. Specifically, this review should determine if the geochemical testing program and water resources modeling meets or exceeds all standards required by the appropriate regulatory agencies and are generally accepted by the scientific community. A meeting should be held with the mining company and Nevada Division of Environmental Protection (NDEP), if possible, to discuss the data and to determine additional geochemical testing and/or water resources modeling is necessary.

The geochemical testing and conceptual water resources modeling requirements should be included in a work plan and be documented in the preparation plan if the BLM anticipates such an effort will be needed. However, plans for the geochemical testing and conceptual water resources modeling should be developed in a broad fashion to allow for changing requirements as the baseline water resource data and other data and analytic needs are identified. Analysis of surface water data, including any modeling efforts, is currently based on State of Nevada, NDEP, permitting standards and BLM 43 CFR 3809 regulations.

Geochemical Data Requirements

Developing an appropriate geochemical testing program starts with a sound, scientific approach to the sampling effort. Samples of geologic materials should be collected that represent interburden, overburden, and ore zone. Additionally, if a pit lake will occur as a result of the mining operation, samples should be collected that represent the ultimate pit surface or pit wall. The proponent should provide a sampling plan, as part of the Environmental Impact Statement (EIS) Preparation Plan, identifying the proposed sampling locations and geologic unit or materials classification. Specific data-collection methods and related data standards are not defined in this guide document. However, references on this topic are appended in Attachment 2 of this document.

Geochemical Testing

Static Testing - For any plan of operations that the interdisciplinary team determines has any acid-generating potential, a static test will be required. A static test attempts to predict acid-producing potential based on the acid-generating and acid-neutralizing minerals present in the sample. Although static testing is generally a fairly quick process (less than 1 week), the test results may determine or indicate the need for additional tests, such as kinetic testing. As such, static tests should be conducted early in the process. The following are the five major static tests that could be utilized. In consultation with the BLM, the operator should determine which test to conduct. Examples of geochemical static testing methods are:

- Acid/Base Accounting (ABA)
- Modified Acid/Base Accounting
- British Columbia Research Initial Test
- Net Acid Production
- Alkaline Production

For the static tests, acid-generating values are expressed as acidification potential (AP), and neutralizing values are expressed as neutralization potential (NP). The net neutralization potential (NNP) equals the NP minus the AP. Hence, a negative NNP test result demonstrates that acid-producing potential exceeds acid-neutralizing potential. A simplifying assumption in the static test is that all acid-generating and acid-neutralizing minerals will be available. This assumption adds uncertainty to the test results. To deal with the uncertainties of the static test, the BLM requires a kinetic test if the NNP does not exceed +20 and/or the NP value is not at least three times greater than the AP value.

Leaching Tests

Leaching tests should be conducted on representative samples of waste rock, tailings, and ore zone materials to determine the potential types of residual water quality that may result from meteoric and infiltrating waters contacting and moving through these materials. The results of leach testing can be used to aid in the engineering design, materials handling plan, and the final closure plan. Appropriate leach test protocol is defined under American Society for Testing and Materials (ASTM), Criteria and (US Environmental Protection Agency) EPA Guidance.

Kinetic Testing - If the static test results indicate the potential for acid generation or if there is an indication of high metal content, a kinetic test should be conducted. Kinetic tests are used to attempt to duplicate in the laboratory how the

geologic units will behave in the weathering environment. These tests provide an indication of the rate that metals and other elements may leach out of the material and a further prediction of the acid-generation potential. The results of the kinetic test can also be directly placed into the geochemical modeling to determine the potential pit-water quality or the type(s) of potential leachates from tailings impoundments, dumps, and heaps.

Kinetic testing requires a fairly long period of time to conduct (20 weeks or longer). As such, the need for testing and the type(s) of kinetic tests to conduct should be determined early in the process. The following are the five major kinetic tests that could be run. In consultation with the BLM, the operator should determine which tests(s) to conduct. Some examples of kinetic test methods used in Nevada are:

- British Columbia Research, Confirmation
- Humidity Cells ("Shoe Box" and Cylindrical)
- Shake Flask
- Soxhlet Extraction Test
- Column Test

Water Resource Modeling

Groundwater Flow Modeling

Groundwater flow modeling is an analytical tool utilized for predicting a number of hydrologic dynamics, including quantity, rates and flow level. Specifically, this predictive tool have been used in Nevada to estimate the hydrologic effects associated with proposed mining operations. Several different types of groundwater flow model codes are available that can provide information concerning groundwater flow. Because of the different groundwater model code applications and data requirements, the BLM should consult a hydro geologist or hydrologist experienced in groundwater modeling before determining which modeling efforts will
be required.

Modeling effort should include the following steps and information:

. Determine what type is needed.

. Collect all available geologic and hydrologic information and create a conceptual model of the system of interest.

. Select a computer code to be used that has undergone a code verification process as defined by ASTM protocol.

. Develop a model design, where such items as model grid, boundary conditions, and initial conditions are selected.

. The model must be calibrated through appropriate techniques as defined under ASTM protocols.

. A verification process must be conducted on the model.

. There must be a demonstration of the range of uncertainty of the model; this can be accomplished through a sensitivity analysis and a confidence determination.

. The final results should be presented in a orderly and comprehensive report.

Groundwater models are routinely used to predict and evaluate conditions associated with proposed mining operations, ongoing mine operations, and mine closure activities. Groundwater models can be used to study and assess pit dewatering, dewatering of underground workings, water disposal options, and long-term water resource impacts, as well as, cumulative impacts. Examples of groundwater models routinely used to evaluate

mining operations are: MODFLOW, VS2DH, and TWODAN to name but a few.

The American Society for Testing and Materials (ASTM) has developed standards for ground-water modeling. They are as follows:

D-5447 Standard Guide of Application of a Ground-Water model to a Site Specific Problem.
D-5490 Standard Guide for Comparing Ground-Water Flow Simulations to Site-Specific Information.
D-5609 Standard Guide for Defining Boundary Conditions in Ground-Water Flow Modeling.

D-5610 Standard Guide for Initial Conditions in Ground-Water Modeling.
D-5611 Standard Guide for Conducting a Sensitivity Analysis for a Ground-Water Flow Model Application.
D-5618 Standard Guide for Documenting a Ground-Water Flow Application.
D-5880 Standard Guide for Subsurface Flow and Transport Modeling.
D-5981 Standard Guide for Calibrating a Ground-Water Flow Model Application.

Vadose Zone Modeling

Characteristics of the vadose zone, the unsaturated zone between the land surface and the saturated zone or water table, may affect the discharge in many ways. Physical properties of the vadose zone, such as higher permeability layers and geologic structural control (e.g., faults, shear zones, fracture zones), can facilitate movement of discharge to groundwater. In addition, chemical and geochemical reactions within the vadose zone as a result of contacts with discharge water may increase, decrease, or modify to some degree the original quality of the discharge water. Attenuation of chemical constituents in the soil or rock materials within the vadose zone should be considered. If attenuation is to be considered for vadose zone materials receiving discharge waters then the following processes need to be evaluated:

- Physical mechanisms such as filtration, dispersion, dilution.

- Physiochemical mechanisms are dependent on both physical and chemical conditions and can include adsorption and fixation.

- Chemical mechanisms are dependent on chemical reaction of an element or mineral with soil or pore water and includes solution and precipitation of compounds and could result in an increase or reduction in toxicity of a constituent.

- Biological mechanisms include biodegradation of a chemical into the basic oxidation product, bacterial consumption of the cellular uptake.

Other data used to characterize the vadose zone are:

- Lithologic logs or borings or well logs that identify rock type, grain-size distribution, stratigraphy, mineral grain cementing, and thickness of geologic units.

- Structural geologic information that includes faults, fractures, jointing systems, folds, and bedding orientation.

- Geologic maps and cross-sections which show stratigraphic or formation contacts, and structural geology.

- Borehole geophysical logs.

- Surface geophysical surveys.

- Physical properties such as horizontal and vertical permeability, dispersivity, and porosity (secondary and primary).

- Chemical analysis for pH, electrical conductivity (EC), neutralization potential, inorganic and organic analyses.

- Results of batch or column tests showing quality of discharge after reacting with the vadose zone.

- Materials property tests for grain size analyses, moisture content, Atterberg Limits, and maximum density.

- Analyses of fluid movement and chemical transport through the vadose zone. Measurement and testing data for analyzing fluid movement and chemical transport within the vadose zone can be obtained by utilizing lysimeters, neutron log measurements, observation wells, packer tests, and analytical or numerical simulations. Also refer to the IM guidance document for "Hardrock Mining Reclamation and Closure Activities".

Mathematical models can be used to quantify the rate of soil-water movement due to infiltration. The use of vadose zone models for evaluating soil-water interaction has increased in recent years because of new mine designs and the need to protect water resources. There are numerous references that address mathematical models for the vadose zone, one of the most helpful in terms of selection, application, and usability is the document(s) "Estimates of Infiltration Rate in the Vadose Zone: Compilation of Simple Mathematical Models, Volumes I and II, U.S. E.P.A., National Risk Management Research Laboratory, EPA/600/R-97/128a and 128b, 1998".

Numerical models can also be utilized to evaluate engineering designs, expected performance, assess water movement in the unsaturated zone, and predict contaminant loading. Additionally, numerical models can be used to compare design alternatives for cover systems on heaps, dumps, and tailings impoundments. One should keep in mind that appropriate use, and the understanding of assumptions and limitations of such models is key to proper application. These models allow technicians to assess and modify a design concept until specific performance criteria are obtained. An example of numerical models used in recent times to evaluate unsaturated conditions for design and performance at mine operations are: HYDRUS-2D, HELP, UNSAT-H, SEEP, and VS2DT to name but a few.

Geologic Hazards

During the process of mine site and surrounding area characterization and design development for the Plan of Operations (POO) and NEPA process, engineering geology and hydrogeology studies should be performed to identify and evaluated geologic hazards. Geologic hazards are processes that are capable of producing large ground movements as compared to those related to routine analysis of structure settlements and deformations. Hazards that may compromise the structural integrity mine features or operations such as dumps, heaps, impoundments, monitoring wells, water discharge processes, etc., include landslides, subsidence, liquefaction, and other induced ground failure and collapsing soils.

Landslides

Landslides sometimes occur on step terrain or hill slopes and can be capable of reactivation by excavation at the toe, additional loading to a landslide mass, changes to surface drainage control systems, fluctuations in the water table, or earthquake induced ground acceleration.

It is advisable to avoid locating well(s) (ground water monitoring, infiltration, injection, production, discharge) or other water discharge control systems in areas likely to exhibit
landslide potential.

Subsidence and Settlement

Groundwater declines of as much as 1000 feet in alluvial basins in Nevada are known to have caused subsidence of as much as 1-20 feet at mines. If the cause of subsidence is localized (e.g., dewatering of an areally extensive and uniform aquifer) and the movement occurs at about the same rate beneath the mine operation, there may be no impact on the mine operation and structures. If subsidence is not uniform at a mine operation or adjacent areas, different rates of subsidence can result in horizontal or vertical strains that can compromise the integrity or functioning of the mine operation components such as wells, piping systems, and engineered structures.

Settlement can occur from loads placed on the surface such as dumps, heaps, or tailings impoundments. Settlement due to loading can result in horizontal or vertical strains in the subsurface similar to subsidence. Evaluation of settlement may be necessary if wells used for dewatering, infiltration, discharge, or re-injection are located in an area subject to significant loading.

The subsidence and settlement residuals and resultant horizontal movement, horizontal strains and potential earth fissuring can be assessed by empirical methods, simplified elastic methods, and finite element methods (refer to references in Appendices). If a potential exists for settlement or subsidence to occur at a mine site or adjacent areas to a mine operation then these potential hazards must be considered under NEPA and the POO.

Earth fissures have been identified at numerous mine sites in Nevada. Earth fissures appear as surface cracks, a series of small potholes, or linear depressions. Earth fissures can be hairline to tens of feet in width and have been observed to extend tens of feet into the subsurface. Earth fissure development can intensify because of the introduction of surface water either through precipitation or other surface water exposure. It is important to conduct field and remote sensing studies in basins where earth fissure potentials exist. These studies should be conducted as part of the NEPA process, and if such fissure environments were found to exist in the area(s) of the proposed mine operation, then appropriate plans and monitoring should be developed to address this issue.

Monitoring

Monitoring of hydrologic baseline conditions, mining operations, mitigation requirements, and reclaimed areas are important elements of the BLM's responsibilities related to water resource protection. Monitoring is intended to assist the BLM in meeting its responsibilities to manage public lands during and after mining operations. Existing guidance dealing with monitoring can be found in BLM Manual Handbook H-3042-1 - Solids Minerals Reclamation Handbook, BLM National Environmental Policy Act Handbook - H1790-1, and Nevada Cyanide Management Plan. Several good examples of monitoring requirements were recently developed in the field, in coordination with the State, operator and other interested parties, such as the Barrick Goldstrick Plan and EIS, and the Cortez Pipeline Gold Integrated Monitoring Plan.

Monitoring requirements should be discussed with the operator as part of the up-front coordination, plan of operations and NEPA analysis, inspection procedures and closure. The BLM, in coordination with the State and the operator, need to consider long-term effects of mining. Monitoring should be considered for all aspects of the ecosystem, especially the impact on an area's hydrology and the effect on fisheries and wildlife habitat. Specific attention needs to be paid to pit lakes and the management and monitoring of such features.

Wherever possible, monitoring should tier on other regulatory agency requirements, most significantly the States Division of Environmental Protection. Such a coordinated approach will help avoid duplication of effort and ensure both State and Federal agencies are utilizing similar data.

Monitoring can be accomplished by the operator, other agencies and/or the BLM. Each field office should ensure that there is a process in place to assure monitoring is carried out and monitored data is analyzed and reviewed to meet the stated plan objectives. In addition, monitoring requirements should be coordinated, as necessary, with mine closure and bond release.

Nevada Laws and Regulations

The State of Nevada requires a number of permits and actions associated with the planning and development of a mine or mill in the State. The following list identifies the State requirements that may be associated with the use and protection of water

resources.

Permit to Appropriate the Public Waters - Nevada Division of Water Resources (NDWR) requires a permit prior to construction. The operator must submit required information, including the location of point of diversion and place of use; what the water will be used for; and an estimate of the annual consumption of water. Legal authority - NRS Chapter 533 and 534.

Mineral Exploration Hole Plugging - Prior to plugging a hole, the operator must notify the NDWR. Legal authority - Nevada Administrative Code (NAC) 534.

State Ground Water Permit - The (NDEP), Bureau of Water Pollution Control (BWC), requires a permit prior to construction. The operator must provide a site plan; plan and specifications for wastewater treatment plant; geology, soil, hydrology, and flood-plain and drainage area information; chemical analysis of ground water; assessment discharge fluids; drinking-water sources in the area; in addition to other specific site information. Legal authority NRS 445.131 through 445.354 and NAC 445.07-0 through 445.241.

NPDES Permit - Prior to construction, the NDEP, BWPC, requires a permit and information concerning a site plan; plan and specifications; soil information; flood-plain and drainage area; and drinking-water sources in the area. Legal authority - NRS 445.131 through 445.354 and NAC 445.070 through 445.241.

Underground Injection Control Permit - Prior to drilling an injection well, the NDEP, BWPC, requires a permit. The operator must provide a site plan; plan and specifications for the facility; geology, hydrology, soil and flood-plain and drainage information; chemical analysis of ground water and any discharge fluids; information regarding drinking-water sources and wells in the area; verification of financial responsibility; and other site and process information. Legal authority - NRS 445.131 through 445.354 and NAC 445.422 through 445.4278.

Water Pollution Control Permit - Prior to initiation of construction of a process component, the NDEP, Bureau of Mining Regulations and Reclamation, requires a permit and information concerning legal structure of applicant; annual production; area of review assessment; meteorological report; engineering design report; draft operating plans; and other information. Legal authority - NRS 445.131 through 445.354 and NAC 445.242 through 445.24388.

Endangering Wildlife - The Nevada Division of Wildlife (NDOW) needs to make a determination prior to construction whether or not the mining operations would endanger wildlife, including fish habitat. Legal authority - NRS 445, 501.181 and NAC 504.520.

Dredging Permit - Prior to operation, the NDOW requires a permit. Legal authority - NRS 503.425.

Industrial Artificial Pond Permit - The NDOW requires a permit prior to operation of an artificial pond. Legal authority - NRS 502.390 and NAC 502.460 through 502.495.

Permits for Sanitation Facilities - The Nevada Division of Health, Bureau of Consumer Health Protection Services, requires drinking-water and sewage system permits prior to construction. Legal authority - NRS 444, 445, 446, 439.200 and 278.

Attachment 2

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